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4, 8 and 13 are rejected under 35 U.S.C. §103(a) as obvious over Oweis et al. in view of JP7-014569. Claims 5-7, 9, 10, 11 and 14 are rejected under 35 U.S.C. §103(a) as obvious over Tsuda et al., U.S. Patent No. 4,332,867 in view of Jean-Pierre Cailley, U.S. Patent NO. 3,761,314. Claims 12 and 14 are rejected under 35 U.S.C. §103(a) as obvious over Tsuda et al. in view of Jean-Pierre Cailley and further in view of WO/97/30487. Claims 15 and 16 are newly added.

Rejections Under 35 U.S.C. §112, First Paragraph

The Examiner rejects claims 5-14 as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor, at the time the application was filed, had possession of the claimed invention. Applicant respectfully traverses these rejections.

Regarding the Examiner's rejection concerning the lack of exact identity of the terminology "at least one first current collector" between the specification and the claims, it is respectfully pointed out to the Examiner that the description requirement of the first paragraph of 35 U.S.C. § 112 functions to ensure that the inventor had possession of the subject matter later claimed. How the specification satisfies this requirement is immaterial. It is not necessary that the application describe every claim exactly, but only so much that persons of ordinary skill in the art will recognize from the disclosure that the applicant invented the subject matter with

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the claimed limitations. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90, 96 (CCPA 1976). In other words, the claimed subject matter need not be described in *haec verba* in the specification in order for the specification to satisfy the description requirement. *In re Wright*, 866 F.2d 422, 9 USPQ2d 1649 (Fed. Cir. 1989). Therefore, a determination of fulfillment of the description requirement under § 112, first paragraph, turns on whether those skilled in the art would understand what is claimed when the claim is read in light of the specification. *Orthokinetics Inc. v. Safety Travel Chairs Inc.*, 806 F.2d 1565, 1 USPQ2d 1081 (Fed. Cir. 1986).

In the present application, current collectors 1b and 2b are shown in Fig. 1. The claims recite "at least one first current collector." Hence, the structure of "at least one" is shown in Fig. 1. In addition, it has been decided that a claim calling for "means responsive to flow through one of said inlet orifices" reads on means responsive to flow through two orifices because flow through two includes flow through one. As the claim does not say "only one," it must be construed as meaning "at least one." *In re Teague*, 254 F.2d 145, 117 U.S.P.Q. 284, 289 (C.C.P.A. 1958).

Furthermore, the Manual for Patent Examining Procedure (MPEP) §2163.04 states, in part:

The inquiry into whether the description requirement is met must be determined on a case-by-case basis and is a question of fact. *In re*

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Wertheim, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976). A description as filed is presumed to be adequate, unless or until sufficient evidence or reasoning to the contrary has been presented by the examiner to rebut the presumption. See, e.g., *In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971). The examiner, therefore, must have a reasonable basis to challenge the adequacy of the written description. The examiner has the initial burden of presenting by a preponderance of evidence why a person skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims. *Wertheim*, 541 F.2d at 263, 191 USPQ at 97.

In rejecting a claim, the examiner must set forth express findings of fact which support the lack of written description conclusion (see MPEP §§ 2163 for examination guidelines pertaining to the written description requirement). These findings should:

- (A) Identify the claim limitation at issue; and
- (B) Establish a *prima facie* case by providing reasons why a person skilled in the art at the time the application was filed would not have recognized that the inventor was in possession of the invention as claimed in view of the disclosure of the application as filed.

In the present rejection, the Examiner has failed to provide any reasons as to why one of ordinary skill in the art would not have understood the invention or recognized that the inventor had possession of the invention at the time of filing of the application. The rejected claims are clearly supported after one carefully reads the specification and reviews the drawings.

In addition, the Examiner rejects the claims because the drawings fail to show a continuous spiral edge from a top view or a bottom view. It is well known in the art that current collectors can be formed by either multiple collectors or a single collector. Thus, both of these alternatives are supported by Fig. 1. It is also noted

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that from Fig. 3, for example, that if a single collector is used, then it would have to be spiral, thereby forming a continuous spiral edge as claimed. It is further noted that folding of the current collectors shown in Fig. 2 can be folding of the continuous spiral edge as claimed. Moreover, one of ordinary skill in the art would readily appreciate how to obtain a continuous spiral edge in light of the present disclosure. For instance, the current collector can have a strength such that it bends easily and readily obtains a 90 degree angle.

Furthermore, Applicant respectfully traverses the Examiner's position that slits are necessary to form a continuous spiral edge with a flat plane bent at an angle of 90 degrees. For instance, a current collector could be crushed by a cylindrical molding jig to define the claimed structure. In the event pleats were formed by crushing the current collector, the pleats would not prohibit a spiral edge. Claims 9 and 14 are amended to clarify this feature.

In regard to the rejection of these claims, in the event the Examiner maintains her rejection, it is respectfully requested that the Examiner set forth reasons as to why one of ordinary skill in the art would not recognize that the inventor had possession of the invention at the time the application was filed.

Accordingly, it is respectfully requested that all rejections under 35 U.S.C. §112, first paragraph be withdrawn.

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Rejections Under 35 U.S.C. §102(e) and §103(a) based on

Oweis et al. and JP 7-014569

The Examiner rejects claims 1-8 and 10-13 as anticipated by Oweis et al. or obvious over Oweis et al. in view of JP 7-014569. Applicant respectfully traverses these rejections. The independent claims recite, in part, the following:

claim 1:

a current collecting plate joined to the flat plane formed at one side of the electrode plate group and contacting the flat plane along a planar surface of the flat plane; and

said electrode plate group being formed by being inserted in a cylindrical molding jig, and being subjected to pressure by a flat surfaced pressing member from an aperture of the cylindrical molding jig sufficient to flatten said electrode plate group, whereby the flat plane is formed at the one side of the electrode plate group,

claim 5:

a first collector plate contacting a planar surface of the flat plane of the at least one first current collector;

a second collector plate contacting a planar surface of the flat plane of the at least one second current collector; and

said at least one first current collector and said at least one second current collector being formed by being inserted into a cylindrical molding jig, and being subjected to pressure by a flat surfaced pressing member from an aperture of the cylindrical molding jig sufficient to flatten said electrode plate group, whereby the flat plane of the at least one first current collector and the flat plane of the at least one second current collector are formed at opposite ends of the electrode plate group,

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and claim 10:

providing a first collector plate contacting a planar surface of the flat plane of the at least one first current collector;
 providing a second collector plate contacting a planar surface of the flat plane of the at least one second current collector; and
 forming the flat plane of the at least one first current collector and the flat plane of the at least one second current collector at opposite ends of the electrode plate group by inserting the electrode plate group into a cylindrical molding jig, and subjecting the electrode plate group to pressure of a flat surfaced pressing member from an aperture of the cylindrical molding jig sufficient to flatten said electrode plate group.

These limitations are not taught by the cited references.

It respectfully submitted that the Examiner misinterpreted the Oweis et al. reference. It appears the Examiner is confusing tabs 8 for folded portions 12 in Oweis et al. As clearly shown in Oweis et al., Fig. 3, folded portions 12 are not folded at a 90 degree angle and tabs 8, while perpendicular to the longitudinal region of electrodes 4, do not contact a planar surface of the electrodes 4. Thus, the cited art does not teach a structure with the same strength and electrical reliability as in the present invention. Clearly, the present invention structurally distinguishes over these cited references.

Moreover, the present independent claims define how the current collectors are formed. This formation of these elements of the claims structurally defines the present claims over the cited art because the formation provides current collectors with a flat planar surface for contacting a current collector plate, respectively. The

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cited references fail to teach or suggest such a feature because, as stated above, the cited art fail to disclose the structural limitation of a flat plane formed of a collector which is contacted along a flat surface thereof.

Accordingly, it is respectfully requested that all rejections based on the Oweis et al. and JP-7-014569 references be withdrawn.

Rejections Under 35 U.S.C. §103(a) based on Tsuda et al., Jean-Pierre Cailley and WO/97/30487 (equivalent U.S. Patent No. 6,371,995)

The Examiner primarily rejects claims 5-7, 9-12 and 14 based upon the Tsuda et al. and Jean-Pierre Cailley references. Applicant respectfully traverse these rejections.

In this part of the final Office Action, the Examiner admits that the Tsuda et al. reference fails to teach current collectors bent at a 90 degree angle to form a flat plane. Nonetheless, the Examiner relied on the Jean-Pierre Cailley reference for teaching such a feature. The Jean-Pierre Cailley reference, however, also fails to teach or suggest this claimed feature. As can be seen from Fig. 1 of Jean-Pierre Cailley when the collectors (carriers) are layered on top of one another, they fail to form a flat plane. In addition, as shown in Figs. 4 and 6, the collectors 5 clearly are not shown forming a flat plane. Furthermore, there is not teaching or suggestion in Jean-Pierre Cailley that a planar surface of the collectors contact collector plates.

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Moreover, as discussed above in regard to the Oweis et al. reference, there is no teaching or suggestion of forming the flat planes of the current collectors with a cylindrical molding jig as claimed.

Accordingly, it is respectfully requested that all rejections based on the Tsuda et al., Jean Pierre Cailley and WO/97/30487 references be withdraw.

Newly Added Claims

It is respectfully submitted that newly added claims 15 and 16 are allowable over the cited art for being dependent on independent claims discussed above and for additionally reciting that the flat planes are formed simultaneously. This feature is not taught by the cited references.

Pending Claims

For the convenience of the Examiner, APPENDIX II is provided herewith having a complete set of pending claims with all amendments effected therein.

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In light of the foregoing, the application is now believed to be in proper form for allowance of all claims and notice to that effect is earnestly solicited. Please charge any deficiency or credit any overpayment to Deposit Account No. 10-1250.

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APPENDIX I

AMENDED CLAIMS WITH AMENDMENTS INDICATED THEREIN
BY BRACKETS AND UNDERLINING

1. (Twice Amended) A rechargeable battery comprising:

an electrode plate group including a positive electrode plate, in which a positive electrode material is attached to a current collector, a negative electrode plate, in which a negative electrode material is attached to a current collector, the positive and negative electrode plates being superimposed with an intervening separator therebetween, wherein the current collector of one or other of the positive electrode plate and the negative electrode plate is projected on at least one side of the electrode plate group for forming by itself a flat plane on one side of the electrode plate group;

an electrolyte;

a battery container in which the electrode plate group and the electrolyte are accommodated; [and]

a current collecting plate joined to the flat plane formed at one side of the electrode plate group and contacting the flat plane along a planar surface of the flat plane; and

said electrode plate group being formed by being inserted in a cylindrical molding jig, and being subjected to pressure by a flat surfaced pressing member from

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an aperture of the cylindrical molding jig sufficient to flatten said electrode plate group, whereby the flat plane is formed at the one side of the electrode plate group.

5. (Amended) A rechargeable battery comprising:

an electrode plate group including:

at least one first current collector;

a first electrode material adjacent the at least one first current collector;

the at least one first current collector being integrally formed and extending beyond the first electrode material and bending at a 90° angle to [form] define a flat plane at one end of the electrode plate group;

at least one second current collector;

a second electrode material adjacent the at least one second current collector;

the at least one second current collector being integrally formed and extending beyond the second electrode material and bending at a 90° angle to [form] define a flat plane at another end of the electrode plate group; and

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an intervening separator for separating the at least one first current collector and the first electrode material from the at least one second current collector and the second electrode material;

an electrolyte;

a battery container for accommodating the electrode plate group and the electrolyte;

a first collector plate contacting a planar surface of the flat plane of the at least one first current collector; [and]

a second collector plate contacting a planar surface of the flat plane of the at least one second current collector; and

said at least one first current collector and said at least one second current collector being formed by being inserted into a cylindrical molding jig, and being subjected to pressure by a flat surfaced pressing member from an aperture of the cylindrical molding jig sufficient to flatten said electrode plate group, whereby the flat plane of the at least one first current collector and the flat plane of the at least one second current collector are formed at opposite ends of the electrode plate group.

9. (Amended) The rechargeable battery according to claim 6 or 7, wherein a top edge portion of the at least one first current collector is [forms a continuous spiral

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edge] bent orthogonally with respect to the axis of the spiral and forms a continuous spiral edge.

10. (Amended) A method of manufacturing a rechargeable battery comprising the following steps:

providing an electrode plate group including:

at least one first current collector;

a first electrode material adjacent the at least one first current collector;

the at least one first current collector being integrally formed and extending beyond the first electrode material and bending at a 90° angle to [form] define a flat plane at one end of the electrode plate group;

at least one second current collector;

a second electrode material adjacent the at least one second current collector;

the at least one second current collector being integrally formed and extending beyond the second electrode material and bending at a 90° angle to [form] define a flat plane at another end of the electrode plate group; and

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an intervening separator for separating the at least one first current collector and the first electrode material from the at least one second current collector and the second electrode material;

an electrolyte;

providing a battery container for accommodating the electrode plate group and the electrolyte;

providing a first collector plate contacting a planar surface of the flat plane of the at least one first current collector; [and]

providing a second collector plate contacting a planar surface of the flat plane of the at least one second current collector; and

forming the flat plane of the at least one first current collector and the flat plane of the at least one second current collector at opposite ends of the electrode plate group by inserting the electrode plate group into a cylindrical molding jig, and

subjecting the electrode plate group to pressure of a flat surfaced pressing member from an aperture of the cylindrical molding jig sufficient to flatten said electrode plate group.

14. (Amended) The method of manufacturing a rechargeable battery according to claim 11 or 12, wherein a top edge portion of the at least one first

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current collector [forms a continuous spiral edge] is bent orthogonally with respect to the axis of the spiral and forms a continuous spiral edge.

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APPENDIX II

ALL PENDING CLAIMS WITH AMENDMENTS EFFECTED THEREIN

1. (Twice Amended) A rechargeable battery comprising:

an electrode plate group including a positive electrode plate, in which a positive electrode material is attached to a current collector, a negative electrode plate, in which a negative electrode material is attached to a current collector, the positive and negative electrode plates being superimposed with an intervening separator therebetween, wherein the current collector of one or other of the positive electrode plate and the negative electrode plate is projected on at least one side of the electrode plate group for forming by itself a flat plane on one side of the electrode plate group;

an electrolyte;

a battery container in which the electrode plate group and the electrolyte are accommodated;

a current collecting plate joined to the flat plane formed at one side of the electrode plate group and contacting the flat plane along a planar surface of the flat plane; and

said electrode plate group being formed by being inserted in a cylindrical molding jig, and being subjected to pressure by a flat surfaced pressing member from

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an aperture of the cylindrical molding jig sufficient to flatten said electrode plate group, whereby the flat plane is formed at the one side of the electrode plate group.

2. (Amended) The rechargeable battery according to claim 1, wherein the positive electrode plate and the negative electrode plate are wound in spiral fashion with the separator interposed therebetween, with their current collectors being respectively projected at opposite ends of the electrode plate group thereby forming respective projected portions, and flat planes are formed at opposite ends of the electrode plate group by pressing said projected portions of the current collectors at opposite ends of the electrode plate group in directions along the winding axis of the electrode plate group.

3. (Amended) The rechargeable battery according to claim 2, wherein the current collecting plate is arranged in contact with each of the flat planes, and is laser-welded in the radial direction at a plurality of locations in the circumferential direction.

4. (Amended) The rechargeable battery according to claim 2 or 3, wherein the current collecting plate is formed with a plurality of ribs thereon such as to protrude towards the projected portions of the current collectors, the flat planes being formed

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by pressing said ribs against the projected portions of the current collectors and the current collecting plate is welded to each of the current collectors at said ribs.

5. (Amended) A rechargeable battery comprising:

an electrode plate group including:

at least one first current collector;

a first electrode material adjacent the at least one first current collector;

the at least one first current collector being integrally formed and extending beyond the first electrode material and bending at a 90° angle to define a flat plane at one end of the electrode plate group;

at least one second current collector;

a second electrode material adjacent the at least one second current collector;

the at least one second current collector being integrally formed and extending beyond the second electrode material and bending at a 90° angle to define a flat plane at another end of the electrode plate group; and

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an intervening separator for separating the at least one first current collector and the first electrode material from the at least one second current collector and the second electrode material;

an electrolyte;

a battery container for accommodating the electrode plate group and the electrolyte;

a first collector plate contacting a planar surface of the flat plane of the at least one first current collector;

a second collector plate contacting a planar surface of the flat plane of the at least one second current collector; and

said at least one first current collector and said at least one second current collector being formed by being inserted into a cylindrical molding jig, and being subjected to pressure by a flat surfaced pressing member from an aperture of the cylindrical molding jig sufficient to flatten said electrode plate group, whereby the flat plane of the at least one first current collector and the flat plane of the at least one second current collector are formed at opposite ends of the electrode plate group.

6. The rechargeable battery according to claim 5, wherein the at least one first current collector and the at least one second current collector are wound in spiral fashion with the intervening separator disposed therebetween and the flat planes are

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formed by pressing the at least one first current collector and the at least one second current collector at opposite ends of the electrode plate group in directions along the winding axis of the electrode plate group.

7. The rechargeable battery according to claim 6, wherein the the first current collector plate and the second current collector plate are laser-welded in the radial direction at a plurality of locations in the circumferential direction to respective flat planes.

8. The rechargeable battery according to claim 6 or 7, wherein the first current collector plate and the second current collector plate each includes a plurality of ribs protruding toward respective flat planes of the at least one first current collector and the at least one second current collector and the first current collector plate and the second current collector plate are respectively welded to the at least one first current collector and the at least one second current collector at the plurality of ribs.

9. (Amended) The rechargeable battery according to claim 6 or 7, wherein a top edge portion of the at least one first current collector is bent orthogonally with respect to the axis of the spiral and forms a continuous spiral edge.

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10. (Amended) A method of manufacturing a rechargeable battery comprising the following steps:

providing an electrode plate group including:

at least one first current collector;

a first electrode material adjacent the at least one first current collector;

the at least one first current collector being integrally formed and extending beyond the first electrode material and bending at a 90° angle to define a flat plane at one end of the electrode plate group;

at least one second current collector;

a second electrode material adjacent the at least one second current collector;

the at least one second current collector being integrally formed and extending beyond the second electrode material and bending at a 90° angle to define a flat plane at another end of the electrode plate group; and

an intervening separator for separating the at least one first current collector and the first electrode material from the at least one second current collector and the second electrode material;

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an electrolyte;

providing a battery container for accommodating the electrode plate group and the electrolyte;

providing a first collector plate contacting a planar surface of the flat plane of the at least one first current collector;

providing a second collector plate contacting a planar surface of the flat plane of the at least one second current collector; and

forming the flat plane of the at least one first current collector and the flat plane of the at least one second current collector at opposite ends of the electrode plate group by inserting the electrode plate group into a cylindrical molding jig, and subjecting the electrode plate group to pressure of a flat surfaced pressing member from an aperture of the cylindrical molding jig sufficient to flatten said electrode plate group.

11. The method of manufacturing a rechargeable battery according to claim 10, further comprising the step of winding the at least one first current collector and the at least one second current collector in spiral fashion with the intervening separator disposed therebetween and forming the flat planes by pressing the at least one first current collector and the at least one second current collector at opposite

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ends of the electrode plate group in directions along the winding axis of the electrode plate group.

12. The method of manufacturing a rechargeable battery according to claim 11, further comprising laser-welding the first current collector plate and the second current collector plate in the radial direction at a plurality of locations in the circumferential direction to respective flat planes.

13. The method of manufacturing a rechargeable battery according to claim 11 or 12, further comprising the step of providing the first current collector plate and the second current collector plate with a plurality of ribs protruding toward respective flat planes of the at least one first current collector and the at least one second current collector and respectively welding the first current collector plate and the second current collector plate to the at least one first current collector and the at least one second current collector at the plurality of ribs.

14. (Amended) The method of manufacturing a rechargeable battery according to claim 11 or 12, wherein a top edge portion of the at least one first current collector is bent orthogonally with respect to the axis of the spiral and forms a continuous spiral edge.